

DISPENSER

CROSS REFERENCE TO RELATED APPLICATION

This application claims the 35 USC § 119(e) benefit of U.S. Provisional
5 Application S.N. 60/467,585 filed on May 5, 2003.

FIELD OF THE INVENTION

The invention pertains to a dispenser for dispensing interconnected sheets
arranged in a stack, which dispenser has a top surface, a bottom surface,
10 side surfaces connecting the top surface with the bottom surface and an
opening provided in at least one surface for the removal of said sheets from
the dispenser, said stack of interconnected sheets being arranged in said
dispenser with an uppermost sheet placed near or in contact with the top
surface and adjacent to the opening in the top surface and at least the edges
15 of a lowermost sheet arranged on the bottom surface.

BACKGROUND OF THE INVENTION:

Soft sheets such as facial tissue sheets are commonly offered as a stack of
sheets packed in a dispensing box. The dispensing box has an opening
20 typically arranged in the centre of the top surface of the dispensing box
through which opening the user pulls the sheets. In order to facilitate the
removal of the sheets from the dispensing box, the sheets are interfolded,
which means that the sheets are folded into one-another, so that they form a
chain of sheets being interconnected by folded portions. In this manner,
25 when the uppermost sheet is removed from the stack of sheets and pulled
completely through the dispensing opening in the dispensing box, the pulled-
out sheet will automatically bring a portion of the next sheet in the stack out
through the opening thereby making it readily available for gripping and
removing from the dispensing box. The praxis of interfolding sheets in this
30 manner is a convenient way of ascertaining that all of the sheets can be
easily removed from the container. There are many types of interfolding, for

example Z-folding, but neither the type of interfolding, nor the type of sheet is important to the invention.

5 A dispenser of this type is known from US-A-6,053,357 (Yoh), which discloses a box with a dispensing opening having a curvilinear or "S"-shape. The opening facilitates the dispensing of interfolded sheets from a box by fixing the top sheet in a position extending out through the opening, where it is readily accessible to a user.

10 However, a problem arises when it is desired to dispense a flat sheet from the stack of sheets. After opening the dispensing box, which basically means exposing the opening in the box, the user must try and get a grip on the first sheet in order to remove it. In ordinary boxes of this type, the sheet is usually wrinkled when it is presented to the user through the opening in the box. The
15 reason for this is that the width of the sheet is broader than the opening of the box, which commonly extends over no more than about 70 % of the length of the box, in order to fix the sheet in a position ready to use. As a result of these delimited openings a further problem occurs in that the dispensed sheet is subjected to mechanical friction which may cause small
20 fragments to be torn away from the sheet. In addition, the risk of tearing the sheet in two greatly increases. To dispense a flat sheet, it is therefore necessary to widen the opening provided centrally in the box, so that the opening extends from one short side to the other, over the whole width of the stack of sheets. Although a longer opening in the box solves the problem with
25 sheets being wrinkled and torn as they are pulled out of the box, it creates a further problem with sheets falling back into the box where they are inaccessible to the user.

Hence, there exists a great need to improve the dispenser for dispensing of
30 flat sheets from a stack of sheets without the sheet falling down from the opening into the interior of the dispenser.

SUMMARY OF THE INVENTION

The object of the invention is to offer a simple and expedient means of solving the above-mentioned problems and to make available a dispenser mentioned in the introduction which avoids said problems, and to offer a
5 simple and inexpensive method for manufacturing such a dispenser.

In accordance with the invention, the opening of the dispenser extends over essentially the whole diagonal extension of the stack of sheets. Thus, the opening extends preferably over at least one corner of the uppermost sheet
10 of the stack of sheets and essentially over the diagonally opposite corner of the uppermost sheet of the stack of sheets. In a preferred embodiment of the invention, the dispenser has a rectangular top surface and an opening which extends essentially diagonally across the top surface of the dispenser, over essentially one corner of the top surface and essentially over the diagonally
15 opposite corner of the top surface. In a more preferred embodiment the opening extends from essentially one corner of the top surface to essentially the diagonally opposite corner of the top surface. In another preferred embodiment the opening is longer than the diagonal extension of a stack of interconnected sheets, that is to say, the opening extends beyond the
20 diagonally opposed corners of the stack of sheets. However, the opening may also be as large as the diagonal extension of the stack of sheets.

In a dispenser which has an opening diagonally arranged over the stack of sheets, it has been shown that a sheet placed in such a dispenser is able to
25 maintain contact with the opening to a much larger extent when compared to being placed in a dispenser of the conventional kind. As the ability of the sheet to reach and protrude through the opening is improved, the risk of the sheet falling back into the dispenser is greatly diminished.

30 This is explained by the fact that the ability for the sheet to remain in contact with the dispensing opening relies on the length of the sheet necessary to reach the opening. During removal of the sheets, the height of the stack of

5 sheets is reduced and the distance between the uppermost sheet and the opening is increased. As a consequence thereof, the length with which the uppermost sheet protrudes through the opening decreases to a similar extent and the uppermost sheet becomes gradually less visible and increasingly less accessible. In a dispenser according to the invention in which the dispensing opening is arranged diagonally over a stack of interfolded sheets, the uppermost sheet is allowed to reach up to the opening with a length which corresponds to essentially the entire length of one of its short sides. However, in the prior art case, in which the opening extends centrally from one short side to the other of the top surface of the dispenser, and centrally from one short side to the other of the stack of sheets, the sheet is only allowed to reach up through the opening with about half of its short side, as the remaining half is located in the interior of the dispenser. In other words, the conventional kind of dispenser is limited in that it only allows the uppermost sheet to protrude through the opening with at most the length of half the short sides. Consequently, the uppermost sheet loses its contact with the dispensing opening as soon as the height of the stack of sheets is reduced with a distance which corresponds to about half the length of a short side of the dispenser. Thus, the sheet intended to protrude through an opening in a conventional dispenser will lose contact with the opening much faster when compared to a sheet intended to protrude through an opening in accordance with the invention.

25 As mentioned above, the dispensing opening extends over essentially the whole diagonal extension of the stack of sheets. The stack of sheets is here regarded as having a substantially rectangular shape when viewed from above, implying that the stack of sheets may, for example, have two long sides and two short sides, or four sides of essentially equal length. Here, the term "diagonal extension of the stack of sheets" is to be regarded as the extension from one corner of the uppermost surface of the stack of sheets to the diagonally opposite corner of the same surface when viewed from above. In the following text, the term "corner of the uppermost surface" is regarded

to comprise the area in the vicinity of the point where the long sides and the short sides of the uppermost surface meet, respectively. In reality, a stack of sheets is likely to move slightly in relation to the dispenser in which the stack is contained. Thus, the diagonally opposite corners may be somewhat displaced with regard to the opening. However, this displacement should be only minor and the dispensing opening is to be considered as extending essentially diagonally over the stack of sheets.

In one embodiment according to the invention, the opening is cut out in the top surface of the dispenser with an extension corresponding to the same extension or longer than the diagonal extension of a stack of interfolded sheets. In this embodiment the opening can extend the entire way to the diagonally opposed corners of the top surface, formed from the side surfaces, or it can end a distance away from each of said corners, respectively. In the first case the opening is defined by a first diagonal edge, a second diagonal edge, and at least one edge of a side surface. The opening may also extend from one corner of the top surface to a diagonally opposed corner of the top surface, wherein the diagonal edges are the edges of the top surface which form part of the opening. The opening may also be formed by a specific folding method, wherein the opening also may be defined by a first diagonal edge, a second diagonal edge, and at least one side surface. The opening may also extend down along at least a part of at least one side surface of the dispenser. Optionally, the opening may extend down along the entire extension of at least one side surface of the dispenser to the bottom of the stack of sheets. In the case when the opening extends down along the both side surfaces forming the edge, the entire corner edge of the stack of sheets is exposed. When the opening extends down along only one side surface, only a strip of the height of the stack of sheets is exposed.

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In another embodiment, the dispenser is designed as having a front surface which comprises a counterweight, which is connected with the bottom

surface by two diagonally opposed side means, constituting the side surfaces described above. The counterweight forms an opening diagonally arranged over the stack of sheets, but provides no further surfaces to cover the stack of sheets, other than the surfaces intended to keep the remaining stack of sheets down when the uppermost sheet is being withdrawn. The counterweight may be either permanently or moveably attached to the side means. In order to supply the requisite resistance when the sheets are being removed from the stack of sheets, the counterweight is preferably formed from a heavier material, for example, a high density metal, such as iron.

The dispenser comprising a counterweight, two diagonally opposed side means, and a bottom surface, may, of course, be made of another lighter material such as cardboard, plastic, or the like. However, in such a case, it may be expedient to coat the bottom surface with an adhesive so that the dispenser can be retained on a foundation, such as a table, a wall, or the like. When the dispenser is secured to the foundation, the force which acts upon the dispenser when a sheet is withdrawn is counteracted.

The dispenser may, however, be designed in a variety of ways, as long as the dispensing opening extends over the entire extension or longer than the diagonal extension of a stack of sheets. Thus, the dispenser may be designed as a box having a top surface with four or more corners. The dispenser may further have any oval, round, or asymmetric shape.

The dispensing opening is located in at least the top surface of the dispenser, wherein the top surface is defined as the surface which is arranged near or in contact with an uppermost sheet of a stack of sheets. The opening is defined by a length dimension and a width dimension, wherein the length dimension is considerably larger than the width dimension. The opening may be designed in various ways. Hence, triangular, rectangular, oval or circular openings, or openings having irregular shapes are regarded to be within the scope of the invention. In one preferred embodiment, the opening is

designed as a slot. In another embodiment the opening has an essentially oval shape in the top surface. The oval shape is advantageous as it provides the user with an open area through which the uppermost sheet may be easily grasped even when the uppermost sheet is arranged underneath the top surface in an initially packed stage, at the same time as it provides sufficient resistance to the withdrawal of a sheet. The opening may also have a wave-like shape, a shape which renders a support to the sheet as it protrudes through the opening.

10 The dispenser can also be designed so as to provide means for supporting the protruding sheet to a more upright position. Thus, at least one of the edges forming the opening can be provided with a supporting means. In the case of one of the diagonal edges being provided with a supporting means, the protruding sheet will be supported upwards only to some extent, rather than obtaining an essentially upright position as when both of the edges are provided with supporting means. The supporting means can be designed as a flap having a rounded, rectangular, wave-like or any asymmetric shape. The supporting means may also take the form of a long line of elongated projections or fingers shaped in different manners and extending from opposite sides of the dispensing opening of the dispenser as disclosed in EP 1 201 564. In a more preferred embodiment at least one supporting means is provided on the first diagonal edge of the top surface, and at least one supporting means is provided on the second diagonal edge of the top surface, wherein the two diagonal edges are placed essentially opposite each other. The term "first diagonal edge" is used to denote a first edge which extends from one corner of the top surface to the diagonally opposite corner of the top surface, which edge forms one long side of the opening. Correspondingly, "second diagonal edge" is used to denote a second edge of the top surface which edge forms a second long side of the opening placed opposite to the first edge.

In a preferred embodiment, the supporting means of the first and the second edges overlap each other substantially in the same plane prior to the removal of the uppermost sheet through the opening of the dispenser. In this embodiment, the uppermost sheet is in its entirety arranged underneath the top surface prior to the opening of the dispenser. In such a design, the supporting means provide protection against contamination when the dispenser has not yet been opened, and when the first sheet is withdrawn, the supporting means will be pulled upwards by the sheet on either side of said sheet. The pulled-out sheet will automatically bring a portion of the next sheet out through the opening, where it will pass between the supporting means. Thus, the user is presented with a sheet which is held in a fixed position, allowing the user to easily grasp the presented sheet. In order for the supporting means to be able to support the sheet in a substantially upright position, the supporting means are made from a material sufficiently stiff to retain the sheet in an essentially upright position. Accordingly, the thickness and stiffness of a plastic film, or another suitable material, used for the fingers must be selected to match the stiffness and material properties of the tissue.

The supporting means are preferably integrated with the top surface itself, by means of, for example, making the supporting means part of the top surface. The supporting means may also be attached to the underside of the top surface of the dispenser, on opposite sides of the opening. It is, however, also possible to attach the means on the upper side of the top surface of the dispenser.

The stack of sheets to be packed in a dispenser in accordance with the invention are preferably interconnected. By interconnecting is meant that all the sheets in the stack are mechanically connected to each other in a continuous, loosely connected band of individual sheets. That is to say, the sheets are forming a chain of sheets being interconnected by folded portions, by a line of perforations, or the like. The folded type of interconnected sheets

can be arranged so that each sheet comprises at least two areas or panels of preferably equal size, that is, if a sheet has one fold, it comprises two panels with one folding edge preferably centrally in between, and if a sheet has two folds, it comprises three panels and two folding edges, situated at a distance
5 from the edges of the sheet and from each other. It is, however, not necessary to fold the flexible sheet into panels of approximately equal size, it is also possible to achieve a folding with one or more of the panels having a different size from the others, without adversely affecting the withdrawal ability.

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In a preferred embodiment, the interconnected, flexible sheets are folded so that each sheet has an uneven number of panels, preferably three panels. The advantage of such an arrangement is that on the withdrawal of the first flexible sheet, the second flexible sheet follows with the protruding portion
15 directed the same way as the previous sheet, that is, if the first flexible sheet is arranged to be gripped in a left-handed manner, the second flexible sheet will also be likewise grippable. This case may also be advantageous, for example, when the dispenser is permanently fixed and the sheets are required to be more accessible from one direction. This type of interfolding
20 may also prove advantageous when one of the diagonal edges of the opening is provided with only one supporting means which is intended to support the protruding sheet in a more upright position. The interconnected, flexible sheets may also be folded so that each sheet has an even number of panels. In this case the protruding portion of the following sheet will be
25 directed in an opposite direction from that of the previously withdrawn flexible sheet.

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The folded type of interconnected sheets may be folded into each other by means of folding one or more panels of a sheet conventionally having a corresponding V, Z or W appearance, or the like, into another sheet of the same or another V, Z or W appearance, or the like. In addition, the stack of sheets may also be folded so that sheets constituting the stack are folded at

least once along a transverse folding line in the transverse direction of the sheet and at least once along a longitudinal folding line in the longitudinal direction of the sheet. The longitudinal direction of the sheet is here to be regarded as the direction which is perpendicular to the transverse direction, which in turn is extending parallel with one set of side edges of the sheet. Said stack is further characterised in that the two successive sheets are folded into each other, and connected to each other, by means of panels of each sheet, which panels are in the form of rectangles delimited by a longitudinal folding line and a transverse folding line. The two successive sheets are further stacked in such a manner that a longitudinal folding edge formed in the longitudinal folding line of the first sheet is arranged in an opposite direction in relation to the corresponding longitudinal folding edge formed in the longitudinal folding line of the of the following sheet. Furthermore, one panel of the first sheet in the stack of sheets is enclosed by two panels of the following sheet in the stack of sheets. Thus, the panel of the first sheet and the two panels of the following sheet are arranged in an alternated manner.

Such a folding of a stack of sheets results in a strengthened connection between two successive sheets. As the folding of the sheets is made in the longitudinal as well as in the transverse direction, a "pocket" is thus formed in which pocket the following sheet is inserted. Moreover, this type of folding is especially advantageous as the sheets to be dispensed through an opening according to the invention will be completely unfolded when withdrawn. That is to say, a stack of sheets which, due to being folded in the transverse as well as the longitudinal direction, has a comparably small surface area, will obtain the full surface area of the sheet at the withdrawal of the sheet. Thus, the user is provided with a sheet having a full extension, both in the transverse and the longitudinal direction. Said stack of sheets is especially expedient in cases when it is necessary for the user to have an immediate access to fully unfolded sheets which are ready to use. The user in prompt

need of sheets for, for example, wiping, is thus not troubled with separate steps for manual unfolding of prefolded partial areas of the sheet.

5 The dispenser is suitably designed for containing sheets made of tissue paper and/or nonwoven. A tissue paper is defined as a soft absorbent paper having a basis weight below 65 g/m^2 and typically between 10 and 50 g/m^2 . Its density is typically below 0.60 g/cm^3 , preferably below 0.30 g/cm^3 and more preferably between 0.08 and 0.20 g/cm^3 . The present invention refers to all types of tissue paper. For example, the tissue paper may be provided in
10 dry as well as in moist form, and it may be either creped or non-creped.

The fibres contained in the tissue paper are mainly pulp fibres from chemical pulp, mechanical pulp, thermo mechanical pulp, chemo mechanical pulp and/or chemo thermo mechanical pulp (CTMP). The fibres may also be
15 recycled fibres. The tissue paper may also contain other types of fibres enhancing, for example, strength, absorption or softness of the paper. These fibres may be made from regenerated cellulose or synthetic material such as polyolefin, polyesters, polyamides etc.

20 The tissue paper coming out from the tissue machine may be in the form of a single-ply paper sheet. The tissue paper may also be in the form of a laminated multi-ply tissue product comprising at least two tissue plies, which are often joined by either adhesive or mechanically. The adhesive may be applied all over the paper or just in regions, for example dots or lines, or only
25 along the edges of the product. The mechanical methods are mainly embossing either over the entire area of the plies or only along the edges, so called edge embossing. In the final product the plies are mostly easy detectable and can often be separated from each other as single plies.

30 The tissue paper may comprise one or more layers. In the case of more than one layer, the layers cannot or only with considerable difficulty be separated from each other and are joined mainly by hydrogen bonds. The different

layers may be identical or may have different properties regarding for example fibre composition and chemical composition.

5 The term nonwoven is applied to a wide range of products, which in terms of their properties are located between the groups of paper and cardboard on the one hand, and textiles on the other hand. Nonwovens represent flexible porous fabrics that are not produced by the classical methods of weaving or knitting, but by intertwining and/or by cohesive and/or adhesive bonding of typical synthetic textile fibres, which may for example be present in the form
10 of endless fibres or fibres prefabricated with an endless length, as synthetic fibres produced in situ or in the form of staple fibres. Alternatively, they may be made from natural fibres or from blends of synthetic fibres and natural fibres.

15 The dispenser according to the invention may be produced in various ways. Most commonly, the dispenser is formed from a single piece of material in sheet form in which an opening is cut out in the area which is to constitute the top surface.

20 However, according to one embodiment of the invention the dispenser is expediently formed from a single piece of material in sheet form, which has a first diagonal edge and one second diagonal edge. The sheet is further provided with fold lines along which the piece of material is folded so as to form a dispenser having a top surface, a bottom surface, and side surfaces
25 connecting the top surface with the bottom surface, and an opening. An advantage with said embodiment is that the opening being delimited by the first diagonal edge and the second diagonal edge, is formed when the dispenser is assembled. Thus, no separate manufacturing step is required in order to cut out an opening in the dispenser.

The stack of sheets to be enclosed in such a dispenser is most conveniently placed upon that part of the piece of material which is to form the bottom surface. In a subsequent step, the uppermost panel of the uppermost sheet in the stack of sheets is lifted from the stack of sheets. That part of the piece of material which is to form about one half of the top surface ending in the first diagonal edge is then folded over the panel exposed underneath the lifted panel, after which the lifted panel is lowered. Then, that part of the piece of material ending in the second diagonal edge which is to form about the second half of the top surface is folded over the uppermost panel, wherein an opening is formed through which an essentially triangular portion of the uppermost sheet is exposed. Thereafter, the remaining portions of the piece of material are folded so as to enclose the stack of sheets. In this manner, the first panel of the uppermost sheet is, from the outset, and by the means of a simple manufacturing procedure, arranged through the opening. Of course, it is also possible to fold the piece of material around the stack of sheets, without having the uppermost sheet protruding through the opening. In this case, the stack of sheets will be arranged underneath the top surface.

In order to provide a protecting cover over the opening, that portion of the piece of material which is to form the second half of the top surface may be designed so as to be able to cover the opening as well as the protruding portion of the sheet. The cover may be detachable, by means of perforations along, for example, the diagonal opening, or the like. The cover can also be made reclosable, for example, by supplying certain areas with reclosable means, such as areas with adhesive, hook-and-loop arrangements, flaps to be inserted in slots, or the like.

Furthermore, the piece of material can be provided with folding lines along the first diagonal edge and/or the second diagonal edge, respectively, whereupon the piece of material is made to extend into supporting means, such as flaps. In this manner, means for fixing a sheet which is protruding

through the opening is provided in a simple and expedient way, without the nuisance of securing additional material to the ready-made dispenser.

BRIEF DESCRIPTION OF THE DRAWINGS

- 5 The invention will in the following be described in greater detail, with reference to the figures which are shown on the appended drawings. In the drawings:

- Fig. 1 shows a conventional dispenser.
- 10 Fig. 2 shows a dispenser in accordance with a first embodiment of the invention.
- Fig. 3 shows a dispenser in accordance with another embodiment of the invention.
- 15 Fig. 4 shows a dispenser in accordance with another embodiment of the invention.
- 20 Figure 5A shows a plan view of a dispenser in an unassembled state.
- Figure 5B shows a plan view of a dispenser in an unassembled state.
- Figure 5C shows a plan view of a dispenser in an unassembled state.
- 25 These drawings are schematic and do not limit the scope of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

- 30 Fig. 1 shows a conventional dispenser containing a stack of sheets 2, which dispenser is in the form of a generally rectangular box 1. The dispenser 1 has a top surface 3, a bottom surface 4, two long side surfaces 5,6 and two short

side surfaces 7,8. The box 1 is provided with an opening 9 in the top surface 3. The opening 9 is arranged generally centrally in the top surface 3 and extends parallel to the long side surfaces 5,6. The opening 9 is formed as a slot with rounded ends. In order to allow sheets to be removed flat, without wrinkling, the length of the opening 9 between its rounded ends must be longer than the sheets. The stack of sheets 2 rests with a lower-most sheet (not shown) on the inner surface of the bottom surface 4 and protrudes through the opening 9 with an uppermost sheet 10.

As can be seen in Fig. 1, the long side 11 and about half the length of the short sides 12, respectively, of the uppermost sheet 10 are exposed through the opening 9. The stack of sheets 2 enclosed in the box 1 has from the outset a height which substantially corresponds to the height of the box 1, that is, to the height of the side surfaces 5-8. As can be understood from the drawing, when the stack of sheets 2 is reduced, the length with which the short sides 12 of the uppermost sheet 10 protrude through the opening 9 is reduced to a proportional extent. When the height of the stack of sheets 2 has been reduced with a distance similar to half the length of the short sides 12 of the uppermost sheet 10, the following sheet will be unable to reach the opening 9, and will, thus, fall back to the interior of the box 1. However, at this point the stack of sheets 2 is commonly only partly consumed, and a number of sheets remain to be grasped. As the sheets are no longer available through the opening 9, the user must, often in a cumbersome manner, try to get hold of the sheets through the opening 9. If the user is in a hurry, or has stained fingers, the process of removing sheets from the interior of the box 1 may be perceived as rather annoying.

In Fig. 2 a dispenser according to the invention is shown. The figure shows a generally rectangular box 1 containing a stack of sheets 2. The box 1 has a rectangular top surface 3, a bottom surface 4, two long side surfaces 5,6 and two short side surfaces 7,8. The box 1 is provided with an opening 9 in the top surface 3. The opening 9 extends essentially from one corner 13a of the

stack of sheets 2 enclosed in the box 1 to the diagonally opposite corner 13b of the stack of sheets 2 enclosed in the box 1. The opening 9 is formed as a slot defined by a first diagonal edge 14a and a second diagonal edge 14b which are connected in rounded ends. In order to allow sheets to be removed
5 flat, without wrinkling, the length of the opening 9 between its rounded ends is longer than the diagonal extension of the sheets. The stack of sheets 2 rests with a lowermost sheet (not shown) on the inner surface of the bottom surface 4 and protrudes through the opening 9 with an uppermost sheet 10. The stack of sheets 2 has further an appearance which substantially
10 corresponds to the two long side surfaces 5,6 and two short side surfaces 7,8 and the essentially rectangular top surface 3 of the box 1.

In the box 1 in accordance with the invention, the long side 11 and the entire length of one of the short sides 12 of the uppermost sheet 10 are exposed
15 through the opening. The stack of sheets 2 enclosed in the box 1 has from the outset a height which substantially corresponds to the height of the box 1, that is, to the height of the side surfaces 5-8. In the same manner as above, when the stack of sheets is reduced, the length with which a short side 12 of the uppermost sheet protrudes through the opening 9 is reduced to a
20 proportional extent. However, as is evident from the figure, owing to the fact that one of the short sides 12 of the uppermost sheet 10 protrudes with its entire length through the opening 9, the uppermost sheet 10 will be able to reach the opening, well below the point in the stack of sheets 2 corresponding to half the length of the short side 12. Hence, even the
25 lowermost sheet in the stack of sheets 2 will be allowed to reach up to the opening 9, when the length of the protruding short side 12 is made as large as, or somewhat larger, than the height of the side surfaces 5-8 of the box 1. Thus, in a box in accordance with the invention, the height of the stack of sheets 2 can be made substantially higher when compared to a box 1 of the
30 conventional kind, without subjecting the user to the nuisance of having sheets falling back into the box 1.

Even though the box 1 is depicted as having an essentially rectangular shape, the box 1 may adopt any given shape, as long as the opening 9 in the top surface 3 is arranged diagonally over the stack of sheets 2. Thus, the box 1 may even be designed as a cylinder, in which the opening 9 may be provided in one of the circular end surfaces corresponding to the top surface 3.

In addition, it is not necessary for the dispensing opening 9 to be designed in the form of a slot, instead a number of forms are conceivable within the scope of the invention. Thus, the opening 9 may have the form of a triangle, rectangle, oval, circle, or any asymmetric shape. Moreover, the opening 9 need not be arranged only in the top surface 3 but could extend into one or more side surfaces 5-8. The opening may also extend in such a manner that it is delimited by the side surfaces 5-8. The opening 9 can further be provided with means for supporting the protruding sheet 10 to a more upright position.

Furthermore, before use of the box of sheets, the opening 9 can be protected by a cover. The protective cover is then commonly made of the same material as the box itself, and is simply a portion of the top surface 3, which can be torn away along a perforated line in the top surface 3. However other protective devices such as separate pieces of paper, paperboard, plastic film, and the like can be envisaged. Moreover, the box can be provided with a permanently attached or removable regular lid which is opened to expose the opening in the top surface 3 and which, optionally, can be reclosed.

The stack of sheets to be packed in a box in accordance with the invention are preferably interfolded. In the case when the interfolded sheets have an uneven number of panels, the protruding sheet 10 is always directed in the same way as the previously withdrawn sheet, thus, the sheets are always directed in a direction corresponding to the one indicated by the arrow A in Fig. 2. In the other case when the interfolded sheets have an even number of panels, the protruding sheet will be directed the opposite way as the

previously withdrawn sheet, and will, thus, be first directed in a direction corresponding to the one indicated by the arrow A in Fig. 2, and then in a direction corresponding to the one indicated by the arrow B.

- 5 In Fig. 3, another embodiment of a dispenser according to the invention is shown. In the same manner as above, the box 1 in Fig. 3 exhibits a top surface 3, a bottom surface 4, two long side surfaces 5,6 and two short side surfaces 7,8.
- 10 In this embodiment, the opening 9 is not only arranged in the top surface 3 but extends also into one of the side surfaces 5. The stack of sheets 2 is, thus exposed, and the user can clearly see how much of the stack of sheets 2 remains to be used.
- 15 The opening 9 is further provided with two supporting means extending from a first and second diagonal edge wherein only the flap 15b and the diagonal edge 14b closest to the observer are to be seen. However, the protruding uppermost sheet 10 is also supported by a flap and a diagonal edge on that side of the protruding uppermost sheet 10 which faces away from the
- 20 observer. In this case the supporting means are identical and placed opposite each other. The supporting means are made part of the top surface 3, and are delimited by folding lines corresponding to the first and the second diagonal edge 14a,b, respectively. The folding lines may be embossed, or made by any other means, in the sheet, in a manufacturing step prior to the
- 25 assembling of the dispenser. Alternatively, the folding line can be formed as a result of the first sheet being withdrawn from the dispenser, that is, no preformed folding lines are made in the piece of material prior to assembly. The supporting means can also be made as separate pieces which are to be attached to the top surface.
- 30 The supporting means are preferably made from the same material as the rest of the box 1. In the case of the supporting means being separately

attached to the box, the supporting means can be made from a different material. In either case, the material must be sufficiently flexible so as to allow the user easy access to the first uppermost sheet 10, but on the other hand it must also be sufficiently stiff to be able to support the sheet 10 in a substantially upright position. Examples of suitable materials for the supporting means are plastics, such as polyethylene, paper, metal foil or laminated materials, for example, polyethylene and paper.

Fig. 4 shows an alternative form of a dispenser 1 having a counterweight 18 constituting the front surface, which counterweight 18 is connected with the bottom surface 4 by side surfaces in the form of two diagonally opposed side means 16a,b. The stack of sheets 2 has further a square appearance which substantially corresponds to the bottom surface 4 of the box 1. The counterweight 18 is here formed from two continuous slightly curved rods 17a,b connected in the end portions of the rods 17a,b, but may, of course, be formed in one piece. Thus, the counterweight 18 forms an oval opening 9 diagonally arranged over the stack of sheets 2. The opening 9 can, however, be made having a rectangular, triangular or any asymmetric form. Furthermore, the counterweight 18 may be either permanently or moveably attached to the side means. In order to counteract the force generated at the removal of the sheets, the counterweight 18 is preferably formed from a heavier material, for example, a metal, such as iron.

An advantage with this type of dispenser, is that the sheet is left with greater freedom of movement when the sheet is withdrawn through the opening 9, as no surfaces hold down those portions of the uppermost sheet 10 which do not protrude through the opening. This is especially valid in the case when the stack is made from sheets folded in both the transverse and the longitudinal direction as described above.

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In Fig. 5 three different sheets of material are shown. The sheets exemplify designs which, when folded together, expediently form dispensers in which

the dispensing opening is formed as a result of the folding process. To be noted is that Figs. 5 A, 5 B and 5 C only are examples of such designs, and a number of variations are possible so as to form a dispenser of the above-mentioned kind.

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In all of the Figs. 5 A, 5 B and 5 C the sheets of material are shown as having a top surface 3 divided in two parts, a bottom surface 4, and two long side surfaces 5,6. The piece of material further has two short sides 7,8, which in Fig. 5 C is illustrated in a divided form. Furthermore, the piece of material may also be provided with flanges 19 which are intended to be used as securing means. In Figs. 5 A and 5 B, the flanges are preferably coated with adhesive which is to be attached to suitable areas of the piece of material so that a dispenser is formed when the piece of material is folded together. Alternatively, the areas which are to be connected with the flanges may be coated with the adhesive. Fig. 5 C illustrates an alternative form of securing means, wherein the securing means comprises a flange 19 which is to be inserted into a slot 20. However, there are a number of ways of assembling the piece of material together, and in certain embodiments flanges might not prove to be necessary at all. The piece of material can be composed of a material which may be welded together, for example, different types of plastic material or laminates with weldable outer layers. The piece of material is also provided with tabs 22 which may be folded in such a manner that the corner areas of the stack of sheets are additionally protected when the dispenser is in its assembled state.

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Figs. 5A, 5 B and 5 C also show a first diagonal edge 14a, and a second diagonal edge 14b, which edges 14a,b are to delimit the dispensing opening. In all the figures the diagonal edges 14a,b have been illustrated as straight lines, implying openings in the form of narrow slots. However, as mentioned above, the openings may be designed in a number of ways, and thus, the diagonal edges may have a number of different shapes, such as wavelike, curved, or the like. In Fig. 5 C the piece of material extends further into

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supporting means 15a,b which are intended to form supporting means to the sheet. In all the embodiments the top surface 3 can be made to extend further than the second diagonal edge 14b, so that a cover which is to protect the opening and/or uppermost sheet is formed. In such a case, the cover to
5 be formed is preferably perforated along a line corresponding to the second diagonal edge 14b or the edge of the flap 15b so that it is easily removed at the opening of the dispenser. However, the cover may also be made reclosable as described above.

10 In Fig. 5 B, it may also be noted that the piece of material has been shortened in relation to the other described figures. The shortened part 21 will, upon assembly of the dispenser, give rise to a slot in the side surface 5 through which the stack of sheets can be seen. Such a slot is exemplified in Fig. 3.

15 The piece of material is formed into a dispenser by means of being folded in fold lines. The fold lines are indicated in the figures as the lines separating the top surface 3, the bottom surface 4 and the side surfaces 5-8 from each other. The flanges 19 are further separated from the above surfaces by fold
20 lines, as are the supporting means 15a,b shown in Fig. 5 C from the top surface 3.

The invention also relates to a method of manufacturing a dispenser in which the piece of material is expediently folded into a dispenser without a separate
25 manufacturing step being required for cutting out an opening in the piece of material. In a first step of manufacturing the piece of material is transported by a conveyor belt. The sheet may either be formed to its predetermined shape prior to being placed on the conveyor belt or during the transport on the conveyor belt. A stack of sheets are then placed upon that surface which
30 is to constitute the bottom surface. The uppermost panel of the stack is then lifted and that part of the top surface which ends in the first diagonal edge is then folded over the panel exposed underneath the lifted panel. The lifted

portion is then lowered to the top surface. In this manner, the uppermost sheet in the stack of sheets is readily available to the user prior to the opening of the dispenser, as the uppermost panel is arranged upon a part of the top surface ending in the first diagonal edge. Thereafter, the remaining
5 portions of the piece of material are folded over the stack of sheets so as to form a dispenser according to the invention. The dispenser is sealed by the flanges as described above.

It is also possible to fold the piece of material around the stack of sheets, so
10 that the uppermost sheet is arranged below the top surface. In this case, the uppermost sheet is protected by the top surface against contamination. When the stack of sheets is completely enclosed by a piece of material according to Fig. 5C, the supporting means will be arranged over the dispensing opening. Thus, as the first sheet is withdrawn from the dispenser
15 the supporting means will be directed upwards as a result of the upward movement of the sheet.